

## **SOP 17 - Pressure and Vacuum Operations**

- A. Pressure or vacuum systems should be equipped with pressure relief devices
  - 1. Examples: Rupture disks or spring-loaded relief valves.
  - 2. Pressure relief devices that may discharge hazardous materials (toxic, flammable, corrosive, etc.) should be vented in a safe and environmentally acceptable manner.
  - 3. Only qualified personnel should perform maintenance on pressure relief devices.
  - 4. Shutoff valves should not be placed between pressure relief devices and the equipment they are to protect.
  - 5. Emergency shutoff valves should be placed at both ends of a process column to control the flow of material in event of failure or rupture.
  - 6. Pressure systems should be inspected regularly; the inspection interval depends upon the criticality of the exposure and upon the likelihood that corrosive or hazardous service could reduce the life of the system.
  - 7. Pressure differentials between systems can force process fluids into unexpected, and perhaps undesirable, locations.
- B. Assembly of Pressure Systems
  - 1. Only approved components should be used in the construction of pressure or vacuum systems.
  - 2. Threaded connections should fit accurately.
    - a. Threaded connections should not be forced.
    - b. Lubricants should not be used on systems that will use oxygen or flammable gases.
    - c. Damaged or ill fitting threaded connections should be rejected.
- C. Consideration should be given to the consequences of accidental leakage between lower and higher pressure systems.
- D. Vacuum apparatus should be placed well back on the laboratory bench or into the fume hood to reduce the potential of it being struck by passersby.
- E. Mouth pipetting and sucking on hoses is prohibited.

F. Glassware

1. Handle vacuum-jacketed apparatus with care to prevent implosions.
2. Glassware should be taped or shielded.
3. Only glassware designed for vacuum operations should be used for that purpose.
4. Examine for flaws all glassware used in pressure operations prior to placing it in service.
5. Do not rely upon corks, rubber stoppers, or plastic tubing as relief devices for glassware.